

WHAT IS CLAIMED IS:

1 1. A process for preparing a product comprising
2 branched olefins, said process comprising:

3 hydrocracking and hydroisomerizing a paraffinic wax
4 to produce an isoparaffinic composition
5 comprising 0.5% or less quaternary carbon
6 atoms, said isoparaffinic composition
7 comprising paraffins having a carbon number of
8 from about 7 to about 18, at least a portion of
9 said paraffins being branched paraffins
10 comprising an average number of branches per
11 paraffin molecule of at least 0.5; said
12 branches comprising a first number of methyl
13 branches and optionally a second number of
14 ethyl branches;

15 exposing said isoparaffinic composition to a
16 dehydrogenation catalyst in an amount and under
17 dehydrogenation conditions effective to
18 dehydrogenate said branched paraffins and to
19 produce said branched olefins comprising 0.5%
20 or less quaternary aliphatic carbon atoms.

1 2. The process of claim 1 wherein said
2 isoparaffinic composition and said branched olefins
3 comprise 0.3% or less quaternary aliphatic carbon atoms.

1 3. The process of claim 1 wherein said
2 isoparaffinic composition comprises at least about 50 %w
3 of said branched paraffins.

1 4. The process of claim 1 wherein at least 75 %w
2 of said branched paraffins comprise a range of molecules
3 of which the heaviest molecules comprises at most 6
4 carbon atoms more than the lightest molecules.

1 5. The process of claim 1 wherein at least 90 %w
2 of said branched paraffins comprise a range of molecules

3 of which the heaviest molecules comprises at most 6
4 carbon atoms more than the lightest molecules.

1 6. The process of claim 1 wherein said paraffins
2 have a carbon number in the range of from 7 to 35.

1 7. The process of claim 1 wherein at least 75%w of
2 said isoparaffinic composition consists of paraffins
3 having a carbon number in the range of from 10 to 18.

1 8. The process of claim 1 wherein at least 90 w%
2 of said isoparaffinic composition consists of paraffins
3 having a carbon number in the range of from 10 to 18.

1 9. The process of claim 1 wherein at least 75%w of
2 said isoparaffinic composition consists of paraffins
3 having a carbon number in the range of from 11 to 14.

1 10. The process of claim 1 wherein at least 90%w of
2 said isoparaffinic composition consists of paraffins
3 having a carbon number in the range of from 11 to 14.

1 11. The process of claim 1 wherein said average
2 number of branches is at least 0.7.

1 12. The process of claim 1 wherein said average
2 number of branches is at most 2.0.

1 13. The process of claim 1 wherein said average
2 number of branches is at most 1.8.

1 14. The process of claim 1 wherein said average
2 number of branches is at most 1.4.

1 15. The process of claim 1 wherein said first
2 number of methyl branches is at least 50%.

1 16. The process of claim 1 wherein said second
2 number of ethyl branches is at most 10%.

1 17. A process for preparing a product comprising
2 branched olefins, said process comprising:

3 hydrocracking and hydroisomerizing a paraffinic wax
4 to produce an isoparaffinic composition
5 comprising less than 0.5% quaternary aliphatic
6 carbon atoms, said isoparaffinic composition

7 comprising paraffins having a carbon number of
8 from about 7 to about 18, at least a portion of
9 said paraffins being branched paraffins
10 comprising an average number of branches per
11 paraffin molecule of at least 0.5, said
12 branches comprising a first number of methyl
13 branches and optionally a second number of
14 ethyl branches; and,

15 exposing said isoparaffinic composition to a
16 dehydrogenation catalyst in an amount and under
17 dehydrogenation conditions effective to
18 dehydrogenate said branched paraffins and to
19 produce said branched olefins comprising less
20 than 0.5% quaternary aliphatic carbon atoms.

1 18. The process of claim 1 wherein said
2 isoparaffinic composition and said branched olefins
3 comprise 0.3% or less quaternary aliphatic carbon atoms.

1 19. The process of claim 1 wherein said
2 isoparaffinic composition comprises at least about 50 %w
3 of said branched paraffins.

1 20. The process of claim 1 wherein said
2 isoparaffinic composition comprises at most 10%w linear
3 paraffins.

1 21. The process of claim 1 wherein said
2 isoparaffinic composition comprises at most 5%w linear
3 paraffins.

1 22. The process of claim 1 wherein said
2 isoparaffinic composition is produced by a Fischer
3 Tropsch process.

1 23. The process of claim 1 wherein said
2 isoparaffinic composition is obtained from an ethylene
3 oligomerization process.

1 24. The process of claim 1 wherein said
2 isoparaffinic composition is treated with an absorbent

3 under conditions effective to perform a function selected
4 from the group consisting of reducing linear paraffin
5 content, favorably adjusting said average number of
6 branches, and a combination thereof.

1 25. The process of claim 1 wherein said
2 dehydrogenation catalyst comprises a quantity of metal or
3 metal compound selected from the group consisting of
4 chrome oxide, iron oxide and, noble metals.

1 26. The process of claim 1 wherein said
2 dehydrogenation catalyst comprises a quantity of noble
3 metal selected from the group consisting of platinum,
4 palladium, iridium, ruthenium, osmium and rhodium.

1 27. The process of claim 1 wherein said
2 dehydrogenation catalyst comprises a quantity of noble
3 metal selected from the group consisting of palladium and
4 platinum.

1 28. The process of claim 1 wherein said
2 dehydrogenation catalyst comprises a quantity of
3 platinum.

1 29. The process of claim 25 wherein said
2 dehydrogenation catalyst further comprises a porous
3 support selected from the group consisting of activated
4 carbon; coke; charcoal; silica; silica gel; synthetic
5 clays; and silicates.

1 30. The process of claim 25 wherein said
2 dehydrogenation catalyst further comprises a porous
3 support selected from the group consisting of gamma
4 alumina or eta alumina.

1 31. The process of claim 25 where said quantity of
2 metal or metal compound is from about 0.01 to 5%w based
3 on the weight of the catalyst.

1 32. The process of claim 26 wherein said catalyst
2 further comprises from about 0.01 to about 5%w of one or
3 more metals selected from the group consisting of Group

4 3a, Group 4a and Group 5a of the Periodic Table of
5 Elements.

1 33. The process of claim 26 wherein said catalyst
2 further comprises from about 0.01 to about 5%w of one or
3 more metals selected from the group consisting of alkali
4 earth metals and alkaline earth metals.

1 34. The process of claim 26 wherein said catalyst
2 further comprises from about 0.01 to about 5%w of one or
3 more metals selected from the group consisting of indium,
4 tin, bismuth, potassium, and lithium.

1 35. The process of claim 26 wherein said catalyst
2 further comprises from about 0.01 to about 5%w of one or
3 more halogens.

1 36. The process of claim 26 wherein said catalyst
2 further comprises from about 0.01 to about 5%w
3 independently of tin and chlorine.

1 37. The process of claim 1 wherein said catalyst is
2 selected from the group consisting of chrome oxide on
3 gamma alumina, platinum on gamma alumina, palladium on
4 gamma alumina, platinum/lithium on gamma alumina,
5 platinum/potassium on gamma alumina, platinum/tin on
6 gamma alumina, platinum/tin on hydrotalcite,
7 platinum/indium on gamma alumina and platinum/bismuth on
8 gamma alumina.

1 38. The process of claim 1 wherein said
2 dehydrogenation conditions comprise a temperature of from
3 about 300°C to about 700 °C. and a pressure of from about
4 1.1 to 15 bar absolute.

1 39. The process of claim 1 wherein hydrogen is fed
2 to said dehydrogenation catalyst with said isoparaffinic
3 composition.

1 40. The process of claim 39 wherein said hydrogen
2 and said paraffins are fed at a molar ratio of from about
3 0.1 to about 20.

1 41. The process of claim 1 wherein said
2 dehydrogenation conditions comprise a residence time
3 effective to maintain a conversion level of said
4 isoparaffinic composition below about 50 mole%.

1 42. The process of claim 1 wherein said branched
2 olefins comprise non-converted paraffins and said process
3 further comprises separating said non-converted paraffins
4 from said branched olefin product and recycling said non-
5 converted paraffins to said dehydrogenation catalyst.

1 43. The process of claim 42 wherein said separating
2 comprises exposing said product comprising non-converted
3 paraffins to molecular sieves.

1 44. The process of claim 43 wherein said molecular
2 sieves are zeolites.

1 45. The process of claim 1 wherein said branched
2 olefin product comprises from about 1 to about 50% mole
3 olefins relative to the total number of moles of olefins
4 and paraffins present.

1 46. The process of claim 1 wherein said branched
2 olefin product comprises from about 10 to about 20% mole
3 olefins relative to the total number of moles of olefins
4 and paraffins present in said product.

1 47. A process for preparing branched alkyl aromatic
2 hydrocarbons comprising:

3 hydrocracking and hydroisomerizing a paraffinic wax
4 to produce an isoparaffinic composition
5 comprising 0.5% or less quaternary carbon
6 atoms, said isoparaffinic composition
7 comprising paraffins having a carbon number of
8 from about 7 to about 18, at least a portion of
9 said paraffins being branched paraffins
10 comprising an average number of branches per
11 paraffin molecule of at least 0.5, said
12 branches comprising a first number of methyl

13 branches and optionally a second number of
14 ethyl branches;
15 exposing said isoparaffinic composition to a
16 dehydrogenation catalyst in an amount and under
17 dehydrogenation conditions effective to
18 dehydrogenate said branched paraffins and to
19 produce a mixture comprising branched olefins
20 comprising 0.5% or less quaternary carbon atoms
21 and non-converted paraffins;
22 contacting said branched olefins with an aromatic
23 hydrocarbon in the presence of a quantity of an
24 alkylation catalyst under alkylation conditions
25 effective to alkylate said aromatic
26 hydrocarbon, producing said branched alkyl
27 aromatic hydrocarbons.

1 48. The process of claim 47 wherein said aromatic
2 hydrocarbon is selected from the group consisting of one
3 or more of benzenes, toluenes, xylenes, and naphthalenes.

1 49. A process as claimed in claim 47 wherein said
2 aromatic hydrocarbon is benzene.

1 50. The process of claim 47 wherein said alkylation
2 conditions are effective to predominately monoalkylate
3 said aromatic hydrocarbon.

1 51. The process of claim 47 wherein said alkylation
2 conditions comprise a molar ratio of said branched
3 olefins to said aromatic hydrocarbons of at least about
4 0.5.

1 52. The process of claim 47 wherein said alkylation
2 conditions comprise a molar ratio of said branched
3 olefins to said aromatic hydrocarbons of at least about
4 1.

1 53. The process of claim 47 wherein said alkylation
2 conditions comprise a molar ratio of said branched

3 olefins to said aromatic hydrocarbons of at least about
4 1.5.

1 54. The process of claim 47 wherein said conditions
2 comprise a liquid diluent selected from the group
3 consisting of an excess of said aromatic hydrocarbon and
4 paraffin mixtures having a boiling range substantially
5 the same as said non-converted paraffins.

1 55. The process of claim 47 wherein said alkylation
2 catalyst is selected from the group consisting of
3 zeolites comprising pores having pore size dimensions of
4 from about 4 to about 9 Å.

1 56. The process of claim 55 wherein said alkylation
2 catalyst comprises one or more zeolites in acidic form
3 selected from the group consisting of zeolite Y, ZSM-5,
4 ZSM-11, and zeolites having an NES zeolite structure
5 type.

1 57. The process of claim 55 wherein said alkylation
2 catalyst comprises one or more zeolites in acidic form
3 selected from the group consisting of mordenite, ZSM-4,
4 ZSM-12, ZSM-20, offretite, gemelinite and cancrinite.

1 58. The process of claim 55 wherein said alkylation
2 catalyst comprises one or more zeolites having an
3 isotypic framework structure selected from the group
4 consisting of NU-87 and gottardiite.

1 59. The process of claim 55 wherein said zeolites
2 have a framework molar ratio of Si to Al of from about
3 5:1 to about 100:1.

1 60. The process of claim 55 wherein said zeolite
2 has said NES zeolite structure type and comprises a
3 framework molar ratio of Si to Al of from about 5:1 to
4 about 25:1.

1 61. The process of claim 60 wherein said framework
2 molar ratio is from about 10:1 to about 20:1.

1 62. The process of claim 55 wherein said zeolites
2 comprise cationic sites, at least a portion of said
3 cationic sites being occupied by replacing ions selected
4 from the group other than alkali metal ions and alkaline
5 earth metal ions.

1 63. The process of claim 62 wherein said replacing
2 ions are selected from the group consisting of ammonium,
3 hydrogen, rare earth metals, and combinations thereof.

1 64. The process of claim 62 wherein at least 50% of
2 cationic sites on said zeolites are in hydrogen form.

1 65. The process of claim 62 wherein at least 90% of
2 cationic sites on said zeolites are in hydrogen form.

1 66. The process of claim 55 wherein said alkylation
2 catalyst comprises pellets comprising at least 50 %w, of
3 said zeolite.

1 67. The process of claim 47 wherein said quantity
2 of said alkylation catalyst is from about 1 to about 50%w
3 relative to the weight of said branched olefins in said
4 mixture.

1 68. The process of claim 47 wherein said alkylation
2 conditions comprise a reaction temperature of from about
3 30°C to about 300 °C.

1 69. The process of claim 47 wherein said
2 isoparaffinic composition comprises at least about 50 %w
3 of said branched paraffins.

1 70. The process of claim 47 wherein said first
2 number of methyl branches is at least about 50% of said
3 branches.

1 71. The process of claim 47 wherein at least 75 %w
2 of said branched paraffins represent a range of molecules
3 of which the heaviest molecules comprise at most 6 carbon
4 atoms more than the lightest molecules.

1 72. The process of claim 47 wherein said
2 isoparaaffinic composition comprises paraffins having a
3 carbon number in the range of from 7 to 35.

1 73. The process of claim 47 wherein at least 75%w
2 of said isoparaaffinic composition consists of paraffins
3 having a carbon number in the range of from 10 to 18.

1 74. The process of claim 47 wherein at least 75%w
2 of said isoparaaffinic composition consists of paraffins
3 having a carbon number in the range of from 11 to 14.

1 75. The process of claim 47 wherein said average
2 number of branches is at least 0.7.

1 76. The process of claim 47 wherein said average
2 number of branches is at most 2.0.

1 77. The process of claim 47 wherein said average
2 number of branches is at most 1.8.

1 78. The process of claim 47 wherein said first
2 number of methyl branches is at least 50% of said
3 branches.

1 79. A process for preparing branched alkyl aromatic
2 hydrocarbons comprising:

3 hydrocracking and hydroisomerizing a paraaffinic wax
4 to produce an isoparaaffinic composition
5 comprising 0.5% or less quaternary aliphatic
6 carbon atoms, said isoparaaffinic composition
7 comprising paraffins having a carbon number of
8 from about 7 to about 18, at least a portion of
9 said paraffins being branched paraffins
10 comprising an average number of branches per
11 paraffin molecule of at least 0.5, said
12 branches comprising a first number of methyl
13 branches and optionally a second number of
14 ethyl branches;

15 exposing said isoparaaffinic composition to a
16 dehydrogenation catalyst in an amount and under

17. dehydrogenation conditions effective to
18. dehydrogenate said branched paraffins and to
19. produce a mixture comprising unconverted
20. paraffins and branched olefins comprising 0.5%
21. or less quaternary aliphatic carbon atoms; and
22. contacting said branched olefins with an aromatic
23. hydrocarbon in the presence of a quantity of an
24. alkylation catalyst under alkylation conditions
25. effective to alkylate said aromatic
26. hydrocarbon, producing said branched alkyl
27. aromatic hydrocarbons.

1 80. The process of claim 79 wherein 0.3% or less of
2 carbon atoms present in said isoparaffinic composition
3 comprise quaternary aliphatic carbon atoms.

1 81. The process of claim 79 wherein at least 50 %w
2 of said isoparaffinic composition is said branched
3 paraffins.

1 82. The process of claim 79 wherein at most 10 %w
2 of said isoparaffinic composition is said linear
3 paraffins.

1 83. The process of claim 79 wherein at most 5 %w of
2 said isoparaffinic composition is said linear paraffins.

1 84. The process of claim 79 wherein at most 1 %w of
2 said isoparaffinic composition is said linear paraffins.

1 85. The process of claim 79 wherein said
2 isoparaffinic composition is produced by a Fischer
3 Tropsch process.

1 86. The process of claim 79 wherein said
2 isoparaffinic composition is treated with an absorbent
3 under absorbent conditions effective to perform a
4 function selected from the group consisting of lowering
5 linear paraffin content, favorably adjusting said average
6 number of branches, and a combination thereof.

1 87. The process of claim 86 wherein said absorbent
2 is a zeolite.

1 88. The process of claim 79 wherein said
2 dehydrogenation catalyst comprises a quantity of metal or
3 metal compound selected from the group consisting of
4 chrome oxide, iron oxide and, noble metals.

1 89. The process of claim 88 wherein said
2 dehydrogenation catalyst comprises a quantity of noble
3 metal selected from the group consisting of platinum,
4 palladium, iridium, ruthenium, osmium and rhodium.

1 90. The process of claim 88 wherein said
2 dehydrogenation catalyst comprises a quantity of noble
3 metal selected from the group consisting of palladium and
4 platinum.

1 91. The process of claim 88 wherein said
2 dehydrogenation catalyst comprises a quantity of
3 platinum.

1 92. The process of claim 88 wherein said catalyst
2 further comprises a porous support selected from the
3 group consisting of gamma alumina or eta alumina.

1 93. The process of claim 88 where said quantity of
2 metal is from about 0.01 to about 5%w based on the weight
3 of said dehydrogenation catalyst.

1 94. The process of claim 89 wherein said
2 dehydrogenation catalyst further comprises from about 0.01
3 to about 5%w of one or more metals selected from the
4 group consisting of Group 3a, Group 4a and Group 5a of
5 the Periodic Table of Elements.

1 95. The process of claim 89 wherein said
2 dehydrogenation catalyst further comprises from about 0.01
3 to about 5%w of one or more metals selected from the
4 group consisting of alkali earth metals and alkaline
5 earth metals.

1 96. The process of claim 89 wherein said
2 dehydrogenation catalyst further comprises from about 0.01
3 to about 5%w of one or more metals selected from the
4 group consisting of indium, tin, bismuth, potassium, and
5 lithium.

1 97. The process of claim 89 wherein said
2 dehydrogenation catalyst further comprises from about 0.01
3 to about 5%w of one or more halogens.

1 98. The process of claim 89 wherein said
2 dehydrogenation catalyst comprises from about 0.01 to
3 about 5%w independently of tin and chlorine.

1 99. The process of claim 79 wherein said
2 dehydrogenation catalyst is selected from the group
3 consisting of chrome oxide on gamma alumina, platinum on
4 gamma alumina, palladium on gamma alumina,
5 platinum/lithium on gamma alumina, platinum/potassium on
6 gamma alumina, platinum/tin on gamma alumina,
7 platinum/tin on hydrotalcite, platinum/indium on gamma
8 alumina and platinum/bismuth on gamma alumina.

1 100. The process of claim 79 wherein said
2 dehydrogenation conditions comprise a temperature of from
3 about 300°C to about 700 °C. and a pressure of from about
4 1.1 to 15 bar absolute.

1 101. The process of claim 79 wherein hydrogen is fed
2 to said dehydrogenation catalyst with said isoparaffinic
3 composition.

1 102. The process of claim 101 wherein said hydrogen
2 and said paraffins are fed at a molar ratio of from about
3 0.1 to about 20.

1 103. The process of claim 79 wherein said
2 dehydrogenation conditions comprise a residence time
3 effective to maintain a conversion level of said
4 isoparaffinic composition of about 50 mole% or less.

1 104. The process of claim 79 further comprising
2 separating non-converted paraffins from said product and
3 recycling said non-converted paraffins to said
4 dehydrogenation catalyst.

1 105. The process of claim 79 wherein said product
2 comprises from about 50% mole or less olefins relative to
3 the total number of moles of olefins and paraffins in
4 said product.

1 106. A process for preparing (branched-alkyl)
2 arylsulfonates comprising:

3 hydrocracking and hydroisomerizing a paraffinic wax
4 to produce an isoparaffinic composition
5 comprising 0.5% or less quaternary carbon
6 atoms, said isoparaffinic composition
7 comprising paraffins having a carbon number of
8 from about 7 to about 18, at least a portion of
9 said paraffins being branched paraffins
10 comprising an average number of branches per
11 paraffin molecule of at least 0.5, said
12 branches comprising a first number of methyl
13 branches and optionally a second number of
14 ethyl branches;

15 exposing said isoparaffinic composition to a
16 dehydrogenation catalyst in an amount and under
17 dehydrogenation conditions effective to
18 dehydrogenate said branched paraffins and to
19 produce a mixture comprising branched olefins
20 and unconverted paraffins, said branched
21 olefins comprising 0.5% or less quaternary
22 carbon atoms;

23 contacting said branched olefins with an aromatic
24 hydrocarbon in the presence of a quantity of an
25 alkylation catalyst under alkylation conditions
26 effective to alkylate said aromatic

27 hydrocarbon, producing branched alkyl aromatic
28 hydrocarbons comprising 0.5% or less quaternary
29 carbon atoms;

30 sulfonating said branched alkyl aromatic
31 hydrocarbons.

1 107. The process of claim 106 wherein said aromatic
2 hydrocarbon is selected from the group consisting of one
3 or more of benzenes, toluenes, xylenes, and naphthalenes.

1 108. The process of claim 106 wherein said aromatic
2 hydrocarbon is benzene.

1 109. The process of claim 106 wherein said
2 alkylation conditions are effective to predominately
3 monoalkylate said aromatic hydrocarbon.

1 110. The process of claim 106 wherein said
2 alkylation catalyst is selected from the group consisting
3 of zeolites comprising pores having pore size dimensions
4 of from about 4 to about 9 Å.

1 111. The process of claim 106 wherein said
2 alkylation catalyst comprises one or more zeolites in
3 acidic form selected from the group consisting of zeolite
4 Y, ZSM-5, ZSM-11, mordenite, ZSM-4, ZSM-12, ZSM-20,
5 offretite, gemelinite, cancrinite, and zeolites having an
6 NES zeolite structure type.

1 112. The process of claim 106 wherein alkylation
2 catalyst is a zeolite having an isotypic framework
3 structure selected from the group consisting of NU-87 and
4 gottardiite.

1 113. The process of claim 110 wherein said zeolites
2 have a framework molar ratio of Si to Al of from about
3 5:1 to about 100:1.

1 114. The process of claim 111 wherein said zeolite
2 has said NES zeolite structure type and has a framework
3 molar ratio of Si to Al of from about 5:1 to about 25:1.

1 115. The process of claim 110 wherein said zeolites
2 comprise cationic sites, at least a portion of said
3 cationic sites being occupied by replacing ions selected
4 from the group other than alkali metal ions and alkaline
5 earth metal ions.

1 116. The process of claim 115 wherein said replacing
2 ions are selected from the group consisting of ammonium,
3 hydrogen, rare earth metals, and combinations thereof.

1 117. The process of claim 115 wherein at least 50%
2 of cationic sites on said zeolites are in hydrogen form.

1 118. The process of claim 115 wherein at least 90%
2 of cationic sites on said zeolites are in hydrogen form.

1 119. The process of claim 110 wherein said
2 alkylation catalyst comprises pellets comprising at least
3 50 %w of said zeolite.

1 120. The process of claim 106 wherein said quantity
2 of said alkylation catalyst is from about 1 to about 50%w
3 relative to the weight of said branched olefins in said
4 mixture.

1 121. The process of claim 106 wherein said
2 isoparaffinic composition comprises at least about 50 %w
3 branched paraffins.

1 122. The process of claim 106 wherein said first
2 number is at least about 50% of said branches.

1 123. The process of claim 106 wherein at least 75 %w
2 of said branched paraffins in said isoparaffinic
3 composition represent a range of molecules of which the
4 heaviest molecules comprises at most 6 carbon atoms more
5 than the lightest molecules.

1 124. The process of claim 106 wherein said
2 isoparaffinic composition comprises paraffins having a
3 carbon number in the range of from 7 to 35.

1 125. The process of claim 106 wherein at least 75%w
2 of said isoparaffinic composition consists of paraffins
3 having a carbon number in the range of from 10 to 18.

1 126. The process of claim 106 wherein at least 75%w
2 of said isoparaffinic composition consists of paraffins
3 having a carbon number in the range of from 11 to 14.

1 127. The process of claim 106 wherein said average
2 number of branches is at least 0.7.

1 128. The process of claim 106 wherein said average
2 number of branches is at most 2.0.

1 129. The process of claim 106 wherein said average
2 number of branches is at most 1.8.

1 130. The process of claim 106 wherein said first
2 number of methyl branches is at least 50% of said
3 branches.

1 131. The process of claim 106 wherein said second
2 number of ethyl branches is at most 10% of said branches.

1 132. A process for preparing (branched-alkyl)
2 arylsulfonates comprising:

3 hydrocracking and hydroisomerizing a paraffinic wax
4 to produce an isoparaffinic composition
5 comprising 0.5% or less quaternary aliphatic
6 carbon atoms, said isoparaffinic composition
7 comprising paraffins having a carbon number of
8 from about 7 to about 18, at least a portion of
9 said paraffins being branched paraffins
10 comprising an average number of branches per
11 paraffin molecule of at least 0.5, said
12 branches comprising a first number of methyl
13 branches and optionally a second number of
14 ethyl branches;

15 exposing said isoparaffinic composition to a
16 dehydrogenation catalyst in an amount and under
17 dehydrogenation conditions effective to

18 dehydrogenate said branched paraffins and to
19 produce a mixture comprising branched olefins
20 and unconverted paraffins, said branched
21 olefins comprising 0.5% or less quaternary
22 aliphatic carbon atoms;
23 contacting said branched olefins with an aromatic
24 hydrocarbon in the presence of a quantity of an
25 alkylation catalyst under alkylation conditions
26 effective to alkylate said aromatic
27 hydrocarbon, producing branched alkyl aromatic
28 hydrocarbons comprising 0.5% or less quaternary
29 aliphatic carbon atoms;
30 sulfonating said branched alkyl aromatic
31 hydrocarbons.

1 133. The process of claim 132 wherein 0.3% or less
2 of carbon atoms present in said isoparaffinic composition
3 comprise quaternary aliphatic carbon atoms.

1 134. The process of claim 132 wherein said
2 isoparaffinic composition is at least 50%w said branched
3 paraffins.

1 135. The process of claim 132 wherein the said
2 isoparaffinic composition is at most 5%w linear
3 paraffins.

1 136. The process of claim 132 wherein said
2 isoparaffinic composition is at most 1%w linear
3 paraffins.

1 137. The process of claim 132 wherein said
2 isoparaffinic composition is produced by a Fischer
3 Tropsch process.

1 138. The process of claim 132 wherein said
2 isoparaffinic composition is treated with an absorbent
3 under absorbent conditions effective to perform a
4 function selected from the group consisting of reducing

5 linear paraffin content, favorably adjusting said average
6 number of branches, and a combination thereof.

1 139. The process of claim 132 wherein said
2 dehydrogenation catalyst comprises a quantity of metal or
3 metal compound selected from the group consisting of
4 chrome oxide, iron oxide and, noble metals.

1 140. The process of claim 132 wherein said
2 dehydrogenation catalyst comprises a quantity of noble
3 metal selected from the group consisting of palladium and
4 platinum.

1 141. The process of claim 133 wherein said
2 dehydrogenation catalyst comprises a quantity of
3 platinum.

1 142. The process of claim 139 wherein said
2 dehydrogenation catalyst comprises a porous support
3 selected from the group consisting of gamma alumina or
4 eta alumina.

1 143. The process of claim 139 where said quantity of
2 metal is from about 0.01 to about 5%w based on the weight
3 of said dehydrogenation catalyst.

1 144. The process of claim 139 wherein said metal or
2 metal compound is a noble metal and said dehydrogenation
3 catalyst further comprises from about 0.01 to about 5%w
4 of one or more metals selected from the group consisting
5 of Group 3a, Group 4a and Group 5a of the Periodic Table
6 of Elements.

1 145. The process of claim 139 wherein said metal or
2 metal compound is a noble metal and said dehydrogenation
3 catalyst further comprises from about 0.01 to about 5%w
4 of one or more metals selected from the group consisting
5 of alkali earth metals and alkaline earth metals.

1 146. The process of claim 139 wherein said metal or
2 metal compound is a noble metal and said dehydrogenation

3 catalyst comprises from about 0.01 to about 5%w
4 independently of tin and chlorine.

1 147. The process of claim 132 wherein said
2 dehydrogenation catalyst is selected from the group
3 consisting of chrome oxide on gamma alumina, platinum on
4 gamma alumina, palladium on gamma alumina,
5 platinum/lithium on gamma alumina, platinum/potassium on
6 gamma alumina, platinum/tin on gamma alumina,
7 platinum/tin on hydrotalcite, platinum/indium on gamma
8 alumina and platinum/bismuth on gamma alumina.

1 148. The process of claim 132 wherein hydrogen and
2 said isoparaffinic composition are fed to said
3 dehydrogenation catalyst at a molar ratio of from about
4 0.1 to about 20.

1 149. The process of claim 132 wherein said
2 dehydrogenation conditions comprise a residence time
3 effective to maintain a conversion level of said
4 isoparaffinic composition below 50 mole%.

1 150. The process of claim 132 further comprising
2 separating non-converted paraffins from said product and
3 recycling said non-converted paraffins to said
4 dehydrogenation catalyst.

1 151. The process of claim 132 wherein said process
2 produces a product comprising from about 5 to about 30%
3 mole olefins relative to the total number of moles of
4 olefins and paraffins in said product.

1 152. A branched olefin composition made by the
2 process of claim 1.

1 153. A branched alkyl aromatic hydrocarbon
2 composition made by the process of claim 47.

1 154. A (branched-alkyl)arylsulfonate composition
2 made by the process of claim 132.